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SEQUENCE LISTING

(1) GENERAL INFORMATION:

- (i) APPLICANT: (US only) BROADY, K. W. and TSENG, A. P. S.
(other than US) Analytica, Ltd
- (ii) TITLE OF INVENTION: A METHOD OF TREATMENT
- (iii) NUMBER OF SEQUENCES: 45
- (iv) CORRESPONDENCE ADDRESS:
 - (A) ADDRESSEE: DAVIES COLLISON CAVE
 - (B) STREET: 1 LITTLE COLLINS STREET
 - (C) CITY: MELBOURNE
 - (D) STATE: VICTORIA
 - (E) COUNTRY: AUSTRALIA
 - (F) ZIP: 3000
- (v) COMPUTER READABLE FORM:
 - (A) MEDIUM TYPE: Floppy disk
 - (B) COMPUTER: IBM PC compatible
 - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
 - (D) SOFTWARE: PatentIn Release #1.0, Version #1.25
- (vi) CURRENT APPLICATION DATA:
 - (A) APPLICATION NUMBER: International PCT
 - (B) FILING DATE: 1999/11/12
- (vii) PRIORITY DATA:
 - (A) APPLICATION NUMBER: 60/108254
 - (B) FILING DATE: 1998/11/12
- (viii) ATTORNEY/AGENT INFORMATION:
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 - (C) TELEX: AA 31787

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(2) INFORMATION FOR SEQ ID NO:1:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 202 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

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Met Lys Ser Leu Gln Ile Ile Cys Leu Leu Phe Val Leu Val Ala Arg
 1             5             10             15

Gly Ser Cys His Ser Cys Glu Ile Cys His Asn Leu Gly Arg Asp Cys
      20             25             30

Glu Thr Glu Glu Ala Glu Glu Cys Ala Ser Pro Glu Asp Gln Cys Gly
      35             40             45

Thr Val Leu Met Glu Val Ser Ser Ala Pro Ile Ser Phe Arg Ser Ile
      50             55             60

His Arg Asn Cys Phe Ser Ser Ser Leu Cys Lys Leu Glu Arg Phe Asp
      65             70             75             80

Ile Asn Ile Gly His Asp Ser Tyr Leu Arg Gly Arg Ile His Cys Cys
      85             90             95

Asp Glu Ala Arg Cys Glu Ala Gln Gln Phe Pro Gly Leu Pro Leu Ser
      100             105             110

Phe Pro Asn Gly Tyr His Cys Pro Gly Ile Leu Gly Val Phe Ser Val
      115             120             125

Asp Ser Ser Glu His Glu Ala Ile Cys Arg Gly Thr Glu Thr Lys Cys
      130             135             140

Ile Asn Leu Ala Gly Phe Arg Lys Glu Arg Phe Pro Gly Asp Ile Ala
      145             150             155             160

Tyr Asn Ile Lys Gly Cys Thr Ser Ser Cys Pro Glu Leu Arg Leu Ser
      165             170             175

Asn Arg Thr His Glu Glu Asp Arg Asn Gly Leu Ile Lys Val Glu Cys
      180             185             190

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Thr Asp Ala Ser Lys Ile Thr Pro Ser Glu
195 200

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 202 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Met Ile Ser Leu Gln Ile Ile Cys Phe Leu Phe Val Leu Val Ala Arg
1 5 10 15

Gly Ser Cys His Ser Cys Glu Ile Cys Arg Asn Phe Gly Lys Asp Cys
20 25 30

Glu Ser Glu Glu Ala Glu Glu Cys Ala Ser Pro Glu Asp Gln Cys Gly
35 40 45

Thr Val Leu Leu Glu Ile Ser Ser Ala Pro Ile Ser Phe Arg Ser Ile
50 55 60

His Arg Asn Cys Phe Ser Ser Ser Leu Cys Lys Leu Glu His Phe Asp
65 70 75 80

Ile Asn Ile Gly His Asp Ser Tyr Val Arg Gly Arg Ile His Cys Cys
85 90 95

Asp Glu Glu Arg Cys Glu Ala Gln Gln Phe Pro Gly Leu Pro Pro Ser
100 105 110

Leu Pro Asn Gly Tyr His Cys Pro Gly Ile Leu Gly Ala Phe Ser Val
115 120 125

Asp Ser Ser Glu His Glu Ala Ile Cys Arg Gly Thr Glu Thr Lys Cys
130 135 140

Ile Asn Leu Ala Gly Phe Arg Lys Glu Arg Tyr Pro Val Asp Ile Ala
145 150 155 160

Tyr Asn Ile Thr Gly Cys Thr Ser Ser Cys Pro Glu Leu Lys Leu Ser
165 170 175

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Asn Arg Thr His Ala Glu Arg Arg Asn Ala Leu Ile Thr Leu Asp Cys
 180 185 190

Thr Asp Ala Ser Lys Ile Ala Pro Ser Glu
 195 200

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 609 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 1..606

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

ATG AAA TCC CTA CAG ATC ATC TGT CCT CTT TTC GTT TTG GTA GCC AGA	48
Met Lys Ser Leu Gln Ile Ile Cys Pro Leu Phe Val Leu Val Ala Arg	
1 5 10 15	
GGA AGC TGT CGC TCA TGT GAA ATT TGT CAC AAT TTT GGA AAA GAT TGC	96
Gly Ser Cys Arg Ser Cys Glu Ile Cys His Asn Phe Gly Lys Asp Cys	
20 25 30	
GAG AGT GAG GAG GCA GAG GAA TGT GCC TCT CCA GAA GAT CAA TGT GGC	144
Glu Ser Glu Glu Ala Glu Glu Cys Ala Ser Pro Glu Asp Gln Cys Gly	
35 40 45	
ACA GTG TTG CTG GAG ATT TCA TCA GCA CCT ATT TCC TTC CGA TCC ATT	192
Thr Val Leu Leu Glu Ile Ser Ser Ala Pro Ile Ser Phe Arg Ser Ile	
50 55 60	
CAT AGG AAC TGT TTC TCA TCC AGC CTC TGC AAA CTT GAA CAC TTT GAT	240
His Arg Asn Cys Phe Ser Ser Ser Leu Cys Lys Leu Glu His Phe Asp	
65 70 75 80	
ATA AAT ATT GGA CAT GAT TCC TAT GTG AGA GGA AGA ATC CAC TGT TGT	288
Ile Asn Ile Gly His Asp Ser Tyr Val Arg Gly Arg Ile His Cys Cys	
85 90 95	

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GAT GAA GAA AGG TGT GAA GGA CAG CAA TTT CCT GGA CTG CCC CTC TCC Asp Glu Glu Arg Cys Glu Ala Gln Gln Phe Pro Gly Leu Pro Leu Ser 100 105 110	336
TTT CCA AAT GGA TAC CAC TGC CCT GGC ATT CTT GGT GCA TTC TCA GTG Phe Pro Asn Gly Tyr His Cys Pro Gly Ile Leu Gly Ala Phe Ser Val 115 120 125	384
GAC AGC TCT GAA CAT GAA GCT ATT TGC AGA GGA ACC GAA ACC AAA TGC Asp Ser Ser Glu His Glu Ala Ile Cys Arg Gly Thr Glu Thr Lys Cys 130 135 140	432
ATT AAC CTT GCG GGA TTC AGA AAA GAA AGA TAT CCT GTA GAC ATC GCT Ile Asn Leu Ala Gly Phe Arg Lys Glu Arg Tyr Pro Val Asp Ile Ala 145 150 155 160	480
TAT AAT ATC AAA GGT TGC ACT TCT TCT TGT CCA GAA CTG AAG TTG AGC Tyr Asn Ile Lys Gly Cys Thr Ser Ser Cys Pro Glu Leu Lys Leu Ser 165 170 175	528
AAT AGA ACT CAC GAA GAA CGT AGA AAT GAT CTA ATA ACA CTT GAA TGT Asn Arg Thr His Glu Glu Arg Arg Asn Asp Leu Ile Thr Leu Glu Cys 180 185 190	576
ACA GAT GCC TCC AAA ATT ACA CCT TCC GAA TAA Thr Asp Ala Ser Lys Ile Thr Pro Ser Glu 195 200	609

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Leu Glu Cys Glu Ile Cys Ile Gly Leu Gly Leu Glu Cys Asn Thr Xaa
1 5 10 15

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Thr Lys Thr Cys Asp Ala Asn Gln Asp Thr Cys Val
20 25

(2) INFORMATION FOR SEQ ID NO:5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Leu Glu Cys Glu Ile Cys Ile Gly Leu Gly Leu Glu Cys Asn
1 5 10

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 5 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Ala Leu Ser Tyr Lys
1 5

(2) INFORMATION FOR SEQ ID NO:7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

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Ser Cys Gly Thr Ser Asp Thr Cys His Leu Asn Tyr Val Glu Thr Thr
 1 5 10 15

Pro His Asn

(2) INFORMATION FOR SEQ ID NO:8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Thr Cys Asp Ala Asn Gln Asp Thr Cys Val Thr Phe Gln Thr Glu Val
 1 5 10 15

Ile Arg

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 8 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Ala Pro Val Thr Leu Gly Leu Ile
 1 5

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid

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- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Glu Cys Thr Glu His Leu Val Ser Cys Arg
1 5 10

(2) INFORMATION FOR SEQ ID NO:11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 13 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Phe Trp Asn Val Leu Glu Asp Val Glu Val Asp Phe Lys
1 5 10

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 29 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

His Ser Cys Glu Ile Cys His Asn Phe Gly Arg Asp Cys Gln Ser Asp
1 5 10 15

Glu Ala Glu Glu Cys Ala Ser Pro Glu Asp Gln Cys Gly

- 9 -

20

25

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 29 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

His Ser Cys Glu Ile Cys His Asn Leu Gly Lys Asp Cys Glu Thr Glu
1 5 10 15

Glu Thr Glu Glu Cys Ala Ser Pro Glu Asp Gln Cys Gly
20 25

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 5 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Ile Thr Pro Ser Glu
1 5

(2) INFORMATION FOR SEQ ID NO:15:

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(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 6 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Arg Phe Asp Ile Asn Ile
1 5

(2) INFORMATION FOR SEQ ID NO:16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 6 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Ile Asn Leu Ala Gly Phe
1 5

(2) INFORMATION FOR SEQ ID NO:17:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 8 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Ala Ser Lys Ile Thr Pro Ser Glu
1 5

(2) INFORMATION FOR SEQ ID NO:18:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Tyr Pro Gly Asp Ile Ala Ile
1 5

(2) INFORMATION FOR SEQ ID NO:19:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 28 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Leu Glu Cys Glu Ile Cys Ile Gly Leu Gly Leu Glu Cys Asn Thr Trp
1 5 10 15

- 12 -

Thr Lys Thr Cys Asp Ala Asn Gln Asp Thr Cys Val
20 25

(2) INFORMATION FOR SEQ ID NO:20:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 5 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Ala Leu Ser Tyr Lys
1 5

(2) INFORMATION FOR SEQ ID NO:21:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Ser Cys Gly Thr Ser Asp Thr Cys His Leu Asn Tyr Val Glu Thr Thr
1 5 10 15

Pro His Asn

(2) INFORMATION FOR SEQ ID NO:22:

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(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 18 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Thr Cys Asp Ala Asn Gln Asp Thr Cys Val Thr Phe Gln Thr Glu Val
1 5 10 15

Ile Arg

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 8 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Ala Pro Val Thr Leu Gly Leu Ile
1 5

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 10 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single

- 14 -

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

Glu	Cys	Thr	Glu	His	Leu	Val	Ser	Cys	Arg
1				5					10

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 13 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

Phe	Trp	Asn	Val	Leu	Glu	Asp	Val	Glu	Val	Asp	Phe	Lys
1				5								10

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 10 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Gly Ser Glu Asn Gln Cys Lys Ser Ile Ile
1 5 10

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 22 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Val Asn Pro Pro Asn Gly Leu Gln Cys Pro Gly Cys Leu Gly Leu Ser
1 5 10 15

Ser Leu Glu Cys Thr Glu
20

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 14 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Cys Gly Thr Ser Asp Thr Cys His Leu Asn Tyr Val Glu Thr
1 5 10

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(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 7 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Glu Phe Gly Leu Phe Phe Arg
1 5

(2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 183 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

His Ser Cys Glu Ile Cys His Asn Phe Gly Lys Asp Cys Glu Gly Gly
1 5 10 15

Glu Thr Glu Glu Cys Ala Ser Pro Glu Asp Gln Cys Gly Thr Val Leu
20 25 30

Met Glu Val Ser Thr Ala Pro Ile Ser Phe Arg Ser Ile His Arg Asn
35 40 45

Cys Phe Ser Ser Ser Leu Cys Lys Leu Glu Arg Phe Asp Ile Asn Ile

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50	55	60
Gly His Asp Ser Phe Leu Arg Gly Arg Ile His Cys Cys Asp Glu Ala		
65	70	75 80
Arg Cys Glu Ala Gln Gln Phe Pro Gly Leu Pro Leu Ser Phe Pro Asn		
85	90	95
Gly Tyr His Cys Pro Gly Ile Leu Gly Leu Phe Ser Val Asp Ser Ser		
100	105	110
Glu His Glu Ala Ile Cys Arg Gly Thr Glu Thr Lys Cys Ile Asn Leu		
115	120	125
Ala Gly Phe Arg Arg Glu Arg Phe Pro Gly Asp Ile Ala Tyr Asn Ile		
130	135	140
Lys Gly Cys Thr Ser Ser Cys Pro Glu Leu Arg Leu Ser Asn Arg Thr		
145	150	155 160
His Glu Glu His Arg Asn Asp Leu Ile Lys Val Glu Cys Thr Glu Ala		
165	170	175
Ser Lys Asn Thr Pro Ser Glu		
180		

(2) INFORMATION FOR SEQ ID NO:31:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 182 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

His Ser Cys Glu Ile Cys His Asn Phe Gly Lys Asp Cys Gln Ser Asp

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1	5	10	15
Glu Thr Glu Glu Cys Ala Ser Ala Glu Asp Gln Cys Gly Thr Val Leu			
20	25	30	
Met Glu Val Ser Ser Ala Pro Ile Ser Phe Arg Ser Ile His Arg Lys			
35	40	45	
Cys Phe Ser Ser Ser Leu Cys Lys Leu Glu Arg Phe Asp Ile Asn Ile			
50	55	60	
Gly His Asp Ser Tyr Leu Arg Gly Arg Ile His Cys Cys Asp Glu Ala			
65	70	75	80
Arg Cys Glu Ala Gln Gln Phe Pro Gly Leu Pro Leu Ser Phe Pro Asn			
85	90	95	
Gly Tyr His Cys Pro Gly Ile Leu Gly Val Phe Ser Val Asp Ser Ser			
100	105	110	
Glu His Glu Ala Ile Cys Arg Gly Thr Glu Thr Lys Cys Ile Asn Leu			
115	120	125	
Ala Gly Phe Arg Lys Glu Arg Tyr Pro Ile Asp Ile Ala Tyr Asn Ile			
130	135	140	
Lys Gly Cys Thr Ser Ser Cys Pro Glu Leu Arg Leu Asn Arg Thr His			
145	150	155	160
Glu Glu His Arg Asn Asp Leu Ile Lys Val Glu Cys Thr Glu Ala Ser			
165	170	175	
Lys Ile Thr Pro Ser Glu			
180			

(2) INFORMATION FOR SEQ ID NO:32:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 183 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single

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(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

His Ser Cys Glu Ile Cys His Asn Phe Gly Lys Asp Cys Glu Gly Gly
1 5 10 15

Val Thr Glu Glu Cys Ala Ser Pro Glu Asp Gln Cys Gly Thr Val Leu
20 25 30

Leu Glu Val Ser Thr Ala Pro Ile Ser Thr Arg Thr Ile His Arg Asn
35 40 45

Cys Phe Ser Ser Ser Leu Cys Lys Leu Glu Arg Phe Asp Ile Asn Ile
50 55 60

Gly His Asp Ser Tyr Met Arg Gly Arg Ile His Cys Cys Asp Glu Ala
65 70 75 80

Arg Cys Glu Ala Gln Gln Phe Pro Gly Leu Pro Leu Ser Phe Pro Asn
85 90 95

Gly Tyr His Cys Pro Gly Ile Leu Gly Leu Phe Ser Val Asp Ser Ser
100 105 110

Glu His Glu Ala Ile Cys Arg Gly Ser Glu Thr Lys Cys Ile Lys Ile
115 120 125

Ala Gly Phe Arg Arg Glu Arg Tyr Pro Ile Asp Ile Ala Tyr Asn Ile
130 135 140

Lys Gly Cys Thr Ser Ser Cys Pro Glu Leu Arg Leu Ser Asn Arg Thr
145 150 155 160

His Glu Glu His Arg Asn Asp Leu Ile Lys Val Glu Cys Thr Asp Ala
165 170 175

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(2) INFORMATION FOR SEQ ID NO:33:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 181 amino acids
(B) TYPE: amino acid
(C) STRANDEDNESS: single
(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Leu Glu Cys Glu Ile Cys Ile Gly Leu Gly Leu Glu Cys Asn Thr Trp
1 5 10 15

Thr Lys Thr Cys Asp Ala Asn Gln Asp Thr Cys Val Thr Phe Gln Thr
20 25 30

Glu Val Ile Arg Ala Pro Val Ser Leu Ser Leu Ile Ser Lys Ser Cys
35 40 45

Gly Thr Ser Asp Thr Cys His Leu Asn Tyr Val Glu Thr Ser Pro His
50 55 60

Asn Glu Leu Thr Val Lys Thr Lys Arg Thr Cys Cys Thr Gly Glu Glu
65 70 75 80

Cys Lys Thr Leu Pro Pro Pro Val Leu Gly His Lys Val Asn Pro Pro
85 90 95

Asn Gly Leu Gln Cys Pro Gly Cys Leu Gly Leu Ser Ser Lys Glu Cys
100 105 110

Thr Glu His Leu Val Ser Cys Arg Gly Ser Glu Asn Gln Cys Leu Ser
115 120 125

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Ile Ile Gly Lys Glu Phe Gly Leu Phe Phe Arg Ala Leu Ser Tyr Lys
 130 135 140

Gly Cys Ala Thr Glu Ser Leu Cys Thr Leu Phe Glu Lys Arg Phe Trp
 145 150 155 160

Asn Val Leu Glu Asp Val Glu Val Asp Phe Lys Cys Thr Pro Ala Leu
 165 170 175

Pro Lys Ser Ser Gln
 180

(2) INFORMATION FOR SEQ ID NO:34:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 501 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

CACTCATGTG AAATTTGTCA CAATTTTGGG AAAGATTGCG AGGGTGGGGA GACAGAGGAA	60
TGTGCCTCTC CAGAAGATCA ATGTGGCACA GTGTTGATGG AGGTTTCAAC AGCACCTATT	120
TCCTTCCGAT CCATTCATAG GAACTGTTTC TCATCCAGCC TCTGCAAAC TGAACGCTTT	180
GATATAAATA TTGGACATGA TTCCTTTTTG AGAGGAAGAA TCCACTGTTG TGATGAAGCA	240
AGGTGTGAAG CACAGCAATT TCCTGGACTG CCCCTCTCCT TTCCAAATGG ATACCACTGC	300
CCTGGAATTC TTGGTTTATT CTCAGTGGAC AGCTCTGAAC ATGAAGCTAT TTGCAGAGGA	360
ACTGAAACCA AATGCATTAA CCTTGCGGGA TTCAGAAGAG AAAGATTTC TGGAGACATC	420
GCTTATAATA TCAAAGGTTG CACTTCTTCT TGTCCAGAAC TGAGGTTGAG CAATAGAACT	480

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CACGAAGAAC ATAGAAATGA G

501

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 501 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

CCTCATGTG AAATTTGTCA CAATTTTGGG AAAGATTGCC AGAGTGACGA GACAGAGGAA	60
TGTGCCTCTG CAGAAGATCA ATGTGGCACG GTGTTGATGG AGGTTTCATC AGCACCTATT	120
TCCTTCCGAT CCATTCATAG GAAGTGTTC TCATCCAGCC TCTGCAAAC TGAACGCTTT	180
GATATAAATA TTGGACATGA TTCCTATTTG AGAGGAAGAA TCCACTGTTG TGATGAAGCA	240
AGGTGTGAAG CACAGCAATT TCCTGGACTG CCCCTCTCCT TTCAAATGG ATACCACTGC	300
CCTGGCATTG TTGGTGTATT CTCAGTGGAC AGCTCTGAAC ATGAAGCTAT TTGCAGAGGA	360
ACTGAAACCA AATGCATTAA CCTTGCGGGA TTCAGAAAAG AAAGATATCC TATAGACATC	420
GCTTATAATA TCAAAGGTTG CACTTCTTCT TGTCCAGAAC TGAGGTTGAA TAGAACTCAC	480
GAAGAACATA GAAATGATCT A	501

(2) INFORMATION FOR SEQ ID NO:36:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 501 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

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(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

CACTCATGTG AAATTTGTCA CAATTTTGGG AAAGATTGCG AGGGTGGGGT GACAGAGGAA	60
TGTGCCTCTC CAGAAGATCA ATGTGGCACA GTGTGCTGG AGGTTTCAAC AGCACCTATT	120
TCCACCCGAA CCATTCATAG GAACTGTTTC TCATCCAGCC TCTGCAAAC TGAACGCTTT	180
GATATAAATA TTGGACATGA TTCCTATATG AGAGGAAGAA TCCACTGTTG TGATGAAGCA	240
AGGTGTGAAG CACAGCAATT TCCTGGACTG CCCCTCTCCT TTCCAAATGG ATACCACTGC	300
CCTGGCATTG TTGGTTTATT CTCAGTGGAC AGCTCTGAAC ATGAAGCTAT TTGCAGAGGA	360
AGTGAAACCA AATGCATTAA AATTGCGGGA TTCAGAAGAG AAAGATATCC TATAGACATC	420
GCTTATAATA TCAAAGGTTG CACTTCTTCT TGTCCAGAAC TGAGGTTGAG CAATAGAACT	480
CACGAAGAAC ATAGAAATGA T	501

(2) INFORMATION FOR SEQ ID NO:37:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 825 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

CTTGAGTGTG AGATTTGTAT CGGGCTGGGC CTGGAATGTA ACACCTGGAC GAAAACCTGT	60
GATGCTAATC AAGATACTTG TGTTACCTTT CAACTGAAG TGATAAGAGC CCCTGTGTCC	120

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CTCTCTTTGA TTTCAAAATC CTGTGGTACT TCTGACACTT GCCATCTTAA CTACGTGGAG	180
ACGAGTCCAC ATAATGAACT AACAGTGAAG ACCAAAAGAA CCTGCTGTAC TGGGGAGGAA	240
TGTAAAACTC TGCCACCGCC TGTGCTTGGA CACAAAGTCA ACCCACCCAA CGGACTTCAG	300
TGTCCTGGAT GCCTTGATT GTCCTCAAAA GAATGCACTG AACACCTGGT TTCCTGCCGG	360
GGATCTGAAA ACCAGTGTTC GTCTATAATT GGGAAAGAAT TTGGCCTTTT CTCAGAGCA	420
TTGTCTTATA AAGGATGTGC TACGGAGAGT CTGTGCACTT TATTTGAGAA GAGGTTCTGG	480
AATGTTTTAG AGGATGTTGA AACAACATAC TCCAAAACAG CCAAACAGC CAAAACAGCA	540
CTACATACTC CTAACCGTAT GCACAACAAC CAAAATGAA ATCCCTACAG ATCATCTGTC	600
TTCTTTTCGT TTTGGTAGCC AGAGGAAGCT GTCAAAAATG AAATCCCTAC AGATCATCTG	660
TCTTCTTTTC GTTTGGTAG CCAGAGGAAG CTGTCAAAAA TGAAATCCCT ACAGATCATC	720
TGTCTTCTTT TCGTTTGGT AGCCAGAGGA AGCTGTACTA CAACCTAAAT GAAGTCCCTC	780
TTATTCTGTT GCCTCTTTGG CACTTTCTTA GCTACAGGCA TGTGT	825

(2) INFORMATION FOR SEQ ID NO:38:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Met	Lys	Ser	Leu	Gln	Ile	Ile	Cys	Leu	Leu	Phe	Val	Leu	Val	Ala	Arg
1			5				10					15			

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Gly Ser Cys

(2) INFORMATION FOR SEQ ID NO:39:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Met Lys Ser Leu Gln Ile Ile Cys Leu Leu Phe Val Leu Val Ala Arg
1 5 10 15

Gly Ser Cys

(2) INFORMATION FOR SEQ ID NO:40:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

Met Lys Ser Leu Gln Ile Ile Cys Leu Leu Phe Val Leu Val Ala Arg
1 5 10 15

Gly Ser Cys

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(2) INFORMATION FOR SEQ ID NO:41:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 19 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: peptide

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

Met Lys Ser Leu Leu Phe Cys Cys Leu Phe Gly Thr Phe Leu Ala Thr
1 5 10 15

Gly Met Cys

(2) INFORMATION FOR SEQ ID NO:42:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 57 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

ATGAAATCCC TACAGATCAT CTGTCTTCTT TTCGTTTTGG TAGCCAGAGG AAGCTGT

57

(2) INFORMATION FOR SEQ ID NO:43:

(i) SEQUENCE CHARACTERISTICS:

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- (A) LENGTH: 57 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

ATGAAATCCC TACAGATCAT CTGTCTTCTT TTCGTTTGG TAGCCAGAGG AAGCTGT

57

(2) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 57 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

ATGAAATCCC TACAGATCAT CTGTCTTCTT TTCGTTTGG TAGCCAGAGG AAGCTGT

57

(2) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 57 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: DNA

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(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

ATGAAGTCCC TCTTATTCTG TTGCCTCTTT GGCACCTTCT TAGCTACAGG CATGTGT

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